

Complete Roll Finishing Concept

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ABSTRACT

The global paper industry is currently under considerable pressure. "Business as usual" is no longer an option, and many paper producers will need to rationalize their business to survive. They have to continuously lower the cost base of their products by eliminating bottlenecks and waste from production processes. Application of a new technology is an option to address these growing pressures.

We introduce here an alternative to conventional roll finishing technology that meets the challenge of constantly increasing costs.

Complete roll finishing concept integrates parent reel handling, winding, core handling, roll handling & wrapping, broke handling, warehousing, sheeter operations, vehicle loading and related automation into a complete single supplier delivery. The main target of the new concept is to improve the productivity of the paper finishing processes. We can provide all products and services from the efficient system layout engineering to skilled site supervision and training. The complete roll finishing solution can be applied to both new and existing processes and it can be delivered also step by step as per each customer's needs.

ROLL HANDLING

The key to an optimally functioning finishing line is a well engineered layout that saves space and links the machinery with the automated roll handling equipment. This reduces investment costs and also minimizes roll defects. In hands-free handling there are fewer possibilities for roll damage. In addition, the automated finishing room requires smaller operating teams.

Automating the routine movement of rolls or pallets also frees up operators for more demanding supervisory work, while reducing errors, defects and accidents. The ongoing increase in roll sizes requires heavy duty but smooth operating handling equipment in order to prevent product damage and deformation. Our product line

comprises cost efficient semi or fully automatic solutions for transporting and handling of all paper, board and tissue rolls. A wide array of diverse intralogistics tasks in finishing houses can be handled by automated guided vehicles (AGV).

ROLL WRAPPING

Packaging protects your valuable products during shipment. We offer a wide range of cost efficient roll wrapping systems for all roll sizes and capacities ranging from 30 to 180 rolls per hour. Our product lines comprise reliable and safe wrapping machines utilizing plastic film, kraft or combination of both to provide optimum protection against climatic, environmental and mechanical stresses. Additional bonus is the good looking

wrapping, radial wrapping or combined axial and radial wrapping. Simplest way to wrap a roll is to wrap it by using 500 mm wide PE stretch film in radial or axial application. Due to compact and straightforward design of our wrapping product family investment costs are lower and the process requires less floor space. Furthermore the wrapping film is relatively low-priced.

In axial wrapping stretch film is applied axially by a rotating dispenser moving around the rotating roll. That kind of wrapping is typically used for soft tissue rolls or rolls that need to be transported short distances only. Axial stretch wrapping is also an ideal solution to bind and keep firmly together a bundle of narrow rolls.

In radial wrapping stretch film is applied spirally around the roll body by a single dispenser traversing parallel to the rotating roll. This type of wrapping provides a reasonable protection against dirt and moisture and is commonly used for mill's internal transport and storage processes. Radial wrapped rolls can be handled in intermediate storages with traditional vacuum lifters, while the roll ends are unwrapped.

Roll ends can be also protected with corrugated board headers that are cut to size to improve roll edge protection. Headers are held tightly in place by approx. 100 mm of stretch wrap overlap around the edge.

Radial wrapping is often used to complement axial wrapping and to improve the moisture protection.

Radial wrapping machine is an easy step for a customer to invest in



Figure 2 Combined wrapping line

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appearance of the package. Stretch wrapping is widely used in the paper industry with three common wrapping methods for paper rolls: axial



Figure 2 Combined wrapping line



Figure 3 Combiwrapped roll



Figure 4 Kraft wrapped roll



Figure 5 Mechanical gripper up and moving

automatic wrapping as it grows among the future production demands. Labelling and header cutting & application can be automated by adding required manipulators or robots and modular machinery can be easily upgraded.

The package's resistance against mechanical handling can be remarkably improved by wrapping stretch wrapped rolls with kraftliner wrapper in spiral or parallel form. In such combined wrapping method rolls are reliably protected also for long distance transportation. In addition, the use of corrugated inner headers, kraftliner and polyethylene film provides a fully separable and recyclable package. Because polyethylene film is applied separately as a moisture barrier, also low quality kraftliner without laminating or coating can be used as a wrapping material.

In kraft spiral wrapping, a PE-laminated or plain kraftliner wrapper is wound at a sharp angle around the roll

body. The number of layers can be adjusted as required by changing the wrapping angle. The vulnerable roll edges are additionally wrapped with parallel bands. Individual layers of wrapper are glued together to form a strong package. Spiral wrapping is suitable for the entire range of roll sizes and it uses a single width of wrapper. Thus it is a cost efficient alternative for the classic full web wrapping.

Kraft wrapping solution can be delivered also as a conventional multistation wrapping machine with required number of wrapper backstands for full web wrapping or as an overlapping wrapping machine with reduced number of backstands. Then the majority of the production is wrapped with a single wrapper and only wider rolls are wrapped with 2 or 3 overlapping wrappers.

Marking, header application and labeling can be also automated by adding manipulators or robots to reach the required capacity. A fully automated

high capacity wrapping system can be controlled and replenished by a single operator, and due to its flexible configuration it can be easily located into a space saving layout. Thus winding and wrapping can be integrated into one process that can be controlled by one operator team.

STORAGE AND SHIPPING

We have developed also a cost effective intermediate storage solution that can be used for all roll grades. An automatic crane furnished with a unique mechanical gripper can handle both wrapped and unwrapped rolls. Transferring several rolls simultaneously decreases the number of handling operations. Gentle but firm grip minimizes roll deformation and damage. This warehouse system can be completed with an automatic truck loading and load securing system to further cut labor costs and improve safety.

